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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/782,422	02/19/2004	Ahmad Said Ghazal	11187 and 11490	6283

7590 01/24/2007  
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EXAMINER
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SYED, FARHAN M

ART UNIT	PAPER NUMBER
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2165

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/24/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/782,422	<b>Applicant(s)</b> GHAZAL, AHMAD SAID	
	<b>Examiner</b> Farhan M. Syed	<b>Art Unit</b> 2165	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 08 November 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-56 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 10-12, 18-23, 30-32, 38-41, 48-50 and 56 is/are rejected.
- 7) ☒ Claim(s) 4-9, 13-17, 24-29, 33-37, 42-47, and 51-55 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. Claims 1-56 are pending.

#### ***Response to Amendment***

2. The affidavit under 37 CFR 1.132 filed 08 November 2006 is sufficient to overcome the rejection of claims 1-56 based upon a specific reference applied under 35 U.S.C. 102(e).

#### ***Double Patenting***

3. In the Applicant's remarks filed 08 November 2006, see page 16, the Applicant argues that the Office Action, dated 08 August 2006, does not present a prima facie case of statutory double patenting. The Examiner disagrees. Claims 1-56 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-17 of U.S. Patent No. 6,990,484 B1. An ordinary person skilled in the art understands that a sub-query is a refinement or an improvement over a query and because the independent claim of the U.S. Patent No. 6,990,484 clearly recites a computer implemented method for improving the efficiency of a database query, the use of a sub-query is clearly obvious. Furthermore, claims 1-17 of U.S. Patent No. 6,990,484 recites all the elements of claims 1-56 of the instant application 10/782,422 and as such anticipates claims 1-56 of the instant application. Although the conflicting claims are not identical, they are not patentably distinct from each other because the grant of a second patent would give rise to an unjustified extension of the rights granted

in the first patent. Therefore, the Examiner maintains the double-patenting rejection of claims 1-56.

***Claim Rejections - 35 USC § 101***

4. Applicant's arguments, see pages 16-17, filed 08 November 2006, with respect to the rejection of claims 1-3, 7, 9-12, 14, 15, 17-23, 27, 29-31, 34, 35, 37, 38, 40, 45, 47-49, 52, 53, 55, and 56 have been fully considered and are persuasive. The rejection of claims 1-3, 7, 9-12, 14, 15, 17-23, 27, 29-31, 34, 35, 37, 38, 40, 45, 47-49, 52, 53, 55, and 56 in the non-final action dated 26 July 2006 has been withdrawn.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-3, 10-12, 18-23, 30-32, 38-41, 48-50, and 56 are rejected under 35 U.S.C. 102(b) as being anticipated by a non-Patent literature titled "Applying Conditions and Parameters" by UVA ODS Specialists, 7/17/2002, pages 1-18 and known as UVA hereinafter).

As per claims 1, 21, and 39, Ghazal teaches a computer-implemented method for analyzing a query (i.e. *"You can create conditions when you begin to make the selections for your query from the database."*)(Page 4), the query including one or more conditions (pages 4-5) and one or more sub-queries (Page 4), the conditions including one or more connecting conditions that introduce the sub-query in the query, each of the sub-queries including zero or more conditions, the method including: determining the satisfiability of the query (i.e. *"For example, the two conditions Pa\_Period=:Pay Period and Pa\_period\_name IN (Mar-02) will conflict if you choose any month in the parameter besides March 2002"*) The preceding text clearly indicates that the individual conditions are satisfiable.)(Page 5), including: determining the satisfiability of the connecting conditions (Page 5); and determining the satisfiability of the conditions in the sub-queries (i.e. *"If you select two or more conditions that conflict a warning message is displayed. For example, the two conditions Pa\_Period=:Pay Period and Pa\_period\_name In (Mar-02) will conflict if you choose any month in the parameter besides March 2002. In this example, if you have selected the Month of April, you will receive the conflicting conditions message. You will need to deselect the conditions that conflict prior to running a successful query."*) The preceding text clearly indicates that the individual conditions are satisfiable.)(Page 5).

As per claims 2, 22, and 40, Ghazal teaches a method where determining the satisfiability of the query further includes determining the satisfiability of all other conditions (Pages 4-5).

As per claims 3, 12, 23, 32, 41 and 50 Ghazal teaches a method where determining the satisfiability of the conditions includes: creating and populating a global

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conditions set (Pages 4-6); and determining the satisfiability of the global conditions set (Pages 4-5).

As per claims 10, 18, 30, 38, 48 and 56 Ghazal teaches a method where analyzing the query further includes: determining the transitive closure of the conditions and, if necessary, modifying the conditions (Page 5).

As per claims 11, 31, and 49, Ghazal teaches a method where the query includes an outer query block and an inner query block, and where determining the transitive closure of the conditions and modifying the conditions includes: determining the transitive closure of conditions in the outer query block (Page 4-5) and, if necessary, modifying the conditions in the outer query block and determining the transitive closure of conditions in the inner query block and, if necessary, modifying the conditions in the inner query block (Pages 4-7).

As per claim 19, Ghazal teaches a computer-implemented method for analyzing a query (i.e. *"You can create conditions when you begin to make the selections for your query from the database."*)(Page 4), the query including one or more conditions (Pages 4-5) and one or more sub-queries (Pages 4-5), the conditions including one or more connecting conditions that introduce the sub-query in the query, each of the sub-queries including zero or more conditions, the method including (i.e. *"For example, the two conditions Pa\_Period=:Pay Period and Pa\_period\_name IN (Mar-02) will conflict if you choose any month in the parameter besides March 2002"*) The preceding text clearly indicates that the individual conditions are satisfiable.)(Page 5):

creating a Global Conditions set including one or more conditions representing one or more connecting conditions (Pages 4-6).

As per claim 20, Ghazal teaches a computer-implemented method for analyzing a query (i.e. *"You can create conditions when you begin to make the selections for your query from the database."*)(Page 4), the query including one or more conditions (Pages 4-5) and one or more sub-queries (Pages 4-5), the conditions including one or more connecting conditions that introduce the sub-query in the query, each of the sub-queries including zero or more conditions, the method including (i.e. *"For example, the two conditions Pa\_Period=:Pay Period and Pa\_period\_name IN (Mar-02) will conflict if you choose any month in the parameter besides March 2002"* The preceding text clearly indicates that the individual conditions are satisfiable.)(Page 5): creating a Transitive Closure set of conditions based on one or more connecting conditions (i.e. *"If you select two or more conditions that conflict a warning message is displayed. For example, the two conditions Pa\_Period=:Pay Period and Pa\_period\_name In (Mar-02) will conflict if you choose any month in the parameter besides March 2002. In this example, if you have selected the Month of April, you will receive the conflicting conditions message. You will need to deselect the conditions that conflict prior to running a successful query."* The preceding text clearly indicates that the individual conditions are satisfiable.)(Page 5).

### ***Allowable Subject Matter***

7. Claims 4-9, 13-17, 24-29, 33-37, 42-47, and 51-55 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in

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independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

As per claims 4, 24, and 42, UVA does not disclose, teach, or suggest the claimed limitation of (in combination with all other features in the claims), a method where the query includes a clause of the form (X CC (SELECT Y FROM T)), where CC is a connecting condition, X and Y are variables or columns, T is a set of one or more tables or views, and where populating the global conditions set includes: if CC is "IN," adding (X=Y) to the global conditions set; if CC is "NOT IN," adding (XGhazalY) to the global conditions set; and if CC includes arithmetic comparison COMP, adding (X COMP Y) to the global conditions set

As per claims 5, 25, and 43, UVA does not disclose, teach, or suggest the claimed limitation of (in combination with all other features in the claims), a method where the query includes a clause of the form (CC (SELECT Y FROM T WHERE R)), where CC is a connecting condition, Y is a variables or a column, T is a set of one or more tables or views, and R is a set of one or more conditions, and where populating the global conditions set includes adding R to the global conditions set

As per claims 6, 16, 26, 36, 44 and 54, UVA does not disclose, teach, or suggest the claimed limitation of (in combination with all other features in the claims), a method



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where determining the satisfiability of the global conditions set includes: converting the form of the conditions in the global conditions set to less-than-or-equal-to conditions; creating a map M of the less-than-or-equal-to conditions; finding the shortest path between all nodes in M; and determining if M has a negative cycle and, if it does, returning that the query is not satisfiable.

As per claims 7, 17, 27, 37, 45 and 55, UVA does not disclose, teach, or suggest the claimed limitation of (in combination with all other features in the claims), a method where creating the map M of the conditions in the global conditions set includes: creating a node for each of the variables in the conditions; creating a node for 0; creating a directed edge from a node representing a first variable, S, to a node representing a second variable, T, with a cost, C, for conditions of the form  $(S \leq T + C)$ ; creating a directed edge from a node representing a first variable, S, to the 0 node, with cost C, for conditions of the form  $(S \leq 0 + C)$ ; and creating a directed edge from the 0 node to a node representing a first variable, S, with cost C, for conditions of the form  $(0 \leq X + C)$ .

As per claims 8, 28, and 46, UVA does not disclose, teach, or suggest the claimed limitation of (in combination with all other features in the claims), a method where finding the shortest path between all nodes in M includes running the Floyd-Warshall Shortest Path Algorithm against M.

As per claims 9, 29, and 47, UVA does not disclose, teach, or suggest the claimed limitation of (in combination with all other features in the claims), a method where determining if M has a negative cycle includes determining if M includes a negative cost edge from a node to itself.

As per claims 13, 33, and 51, UVA does not disclose, teach, or suggest the claimed limitation of (in combination with all other features in the claims), a method where the transitive closure includes one or more transitive closure conditions, and where modifying the conditions to achieve transitive includes: for each transitive closure condition of the form (COL COMP C), where COL is a column, COMP is a comparison, and C is a constant: if COL appears in the outer query block, adding the transitive closure condition to the outer query block; and if COL appears in the inner query block, adding the transitive closure condition to the inner query block.

As per claims 14, 34, and 52, UVA does not disclose, teach, or suggest the claimed limitation of (in combination with all other features in the claims), a method for analyzing a query, the query including one or more conditions of the form  $(X+Y \text{ OP } C)$ , where X and Y are variables, C is a constant, and OP is an operator, the method including: determining the satisfiability of the query, including: determining the satisfiability of the one or more conditions of the form  $(X+Y \text{ OP } C)$ .

As per claims 15, 35, and 53, UVA does not disclose, teach, or suggest the claimed limitation of (in combination with all other features in the claims), a method where a negation of OP is represented by the operator OP', and where determining the satisfiability of the query includes: assigning conditions of the form  $(X \text{ OP } Y+C)$  to a set S1; assigning condition of the form  $(X+Y \text{ OP } C)$  to a set S2; assigning conditions of the form  $(X \text{ OP } C)$  to a set S3; replacing each conditions in set S2 with two conditions in the form  $(Y \text{ OP } -X+C)$  and  $(X \text{ OP } -y+c)$ ; if -X is present in set S2: for each condition in set S3: adding a condition of the form  $(-X \text{ OP' } -C)$  to set S3; and determining the satisfiability of the group of conditions  $(S1 \text{ UNION } S2 \text{ UNION } S3)$ .

#### ***Contact Information***

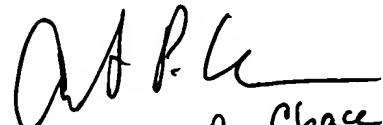
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Farhan M. Syed whose telephone number is 571-272-7191. The examiner can normally be reached on 8:30AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey Gaffin can be reached on 571-272-4146. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

FMS



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SPE, 2169